

L1 1 SEA SPE=ON ABB=ON PLU=ON US 20070142472/PN
 D L1 TI ABS IBIB RN

FILE 'REGISTRY' ENTERED AT 14:53:12 ON 13 JAN 2010

L2 1 SEA SPE=ON ABB=ON PLU=ON 477982-28-8/RN
 SET NOTICE 1 DISPLAY
 D L2 SQIDE 1-
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FILE 'REGISTRY' ENTERED AT 14:53:24 ON 13 JAN 2010

L3 1 SEA SPE=ON ABB=ON PLU=ON 853562-54-6/RN
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FILE 'REGISTRY' ENTERED AT 14:53:35 ON 13 JAN 2010

L4 1 SEA SPE=ON ABB=ON PLU=ON 853562-55-7/RN
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 SET NOTICE LOGIN DISPLAY

FILE 'REGISTRY' ENTERED AT 14:53:47 ON 13 JAN 2010

L5 1 SEA SPE=ON ABB=ON PLU=ON 169222-57-5/RN
 SET NOTICE 1 DISPLAY
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 SET NOTICE LOGIN DISPLAY

FILE 'REGISTRY' ENTERED AT 14:54:13 ON 13 JAN 2010
 E SEGPPOS/RN
 E SEGPPOS/CN

FILE 'REGISTRY' ENTERED AT 14:54:47 ON 13 JAN 2010

L6 1 SEA SPE=ON ABB=ON PLU=ON 244239-57-4/RN
 SET NOTICE 1 DISPLAY
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 SET NOTICE LOGIN DISPLAY

FILE 'REGISTRY' ENTERED AT 14:55:02 ON 13 JAN 2010

L7 1 SEA SPE=ON ABB=ON PLU=ON 757173-83-4/RN
 SET NOTICE 1 DISPLAY
 D L7 SQIDE 1-
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FILE 'REGISTRY' ENTERED AT 14:55:15 ON 13 JAN 2010

L8 1 SEA SPE=ON ABB=ON PLU=ON 244239-56-3/RN
 SET NOTICE 1 DISPLAY
 D L8 SQIDE 1-
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FILE 'REGISTRY' ENTERED AT 14:55:46 ON 13 JAN 2010

L9 1 SEA SPE=ON ABB=ON PLU=ON 853562-59-1/RN
 SET NOTICE 1 DISPLAY
 D L9 SQIDE 1-
 SET NOTICE LOGIN DISPLAY

FILE 'REGISTRY' ENTERED AT 14:56:03 ON 13 JAN 2010

L10 1 SEA SPE=ON ABB=ON PLU=ON 38291-52-0/RN

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L11      FILE 'REGISTRY' ENTERED AT 14:56:22 ON 13 JAN 2010
        1 SEA SPE=ON ABB=ON PLU=ON 38291-54-2/RN
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        D L11 SQIDE 1-
        SET NOTICE LOGIN DISPLAY

L12      FILE 'REGISTRY' ENTERED AT 14:56:38 ON 13 JAN 2010
        1 SEA SPE=ON ABB=ON PLU=ON 853562-56-8/RN
        SET NOTICE 1 DISPLAY
        D L12 SQIDE 1-
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L13      FILE 'REGISTRY' ENTERED AT 14:57:21 ON 13 JAN 2010
        1 SEA SPE=ON ABB=ON PLU=ON 4397-53-9/RN
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        D L13 SQIDE 1-
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L14      FILE 'HCAPLUS' ENTERED AT 14:58:05 ON 13 JAN 2010
        1 SEA SPE=ON ABB=ON PLU=ON US 20070078279/PN
        D L14 RN

L15      FILE 'REGISTRY' ENTERED AT 14:58:21 ON 13 JAN 2010
        1 SEA SPE=ON ABB=ON PLU=ON 503538-69-0/RN
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        D L15 SQIDE 1-
        SET NOTICE LOGIN DISPLAY

L16      FILE 'REGISTRY' ENTERED AT 14:58:36 ON 13 JAN 2010
        1 SEA SPE=ON ABB=ON PLU=ON 503538-70-3/RN
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        D L16 SQIDE 1-
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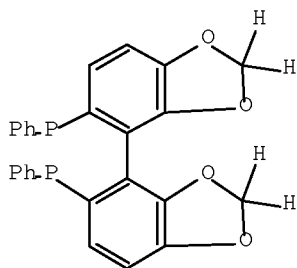
L17      FILE 'REGISTRY' ENTERED AT 14:58:54 ON 13 JAN 2010
        1 SEA SPE=ON ABB=ON PLU=ON 19486-93-2/RN
        SET NOTICE 1 DISPLAY
        D L17 SQIDE 1-
        SET NOTICE LOGIN DISPLAY

L18      FILE 'REGISTRY' ENTERED AT 15:00:24 ON 13 JAN 2010
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        D L18

L18      STRUCTURE UPLOADED

=> d l18
L18 HAS NO ANSWERS
L18          STR

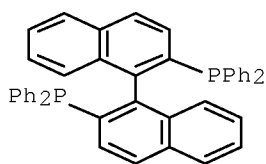
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L19 0 SEA SSS SAM L18
 L20 28 SEA SSS FUL L18

FILE 'REGISTRY' ENTERED AT 15:01:02 ON 13 JAN 2010
 E BINAP/CN
 L21 1 SEA SPE=ON ABB=ON PLU=ON BINAP/CN
 SET EXPAND CONTINUOUS
 D L21

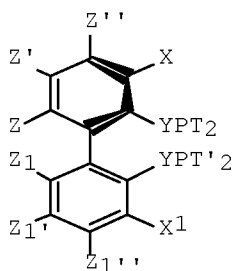
L21 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2010 ACS on STN
 RN 98327-87-8 REGISTRY
 ED Entered STN: 29 Sep 1985
 CN Phosphine, 1,1'-[1,1'-binaphthalene]-2,2'-diylbis[1,1-diphenyl-
 (CA INDEX
 NAME)
 OTHER CA INDEX NAMES:
 CN Phosphine, [1,1'-binaphthalene]-2,2'-diylbis[diphenyl- (9CI)
 OTHER NAMES:
 CN (±)-BINAP
 CN 2,2'-Bis(diphenylphosphanyl)-1,1'-binaphthyl
 CN 2,2'-Bis(diphenylphosphino)-1,1'-binaphthalene
 CN 2,2'-Bis(diphenylphosphino)-1,1'-binaphthyl
 CN BINAP
 CN rac-2,2'-Bis(diphenylphosphino)-1,1'-binaphthyl
 CN Rac-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl
 CN rac-BINAP
 CN [1,1'-Binaphthalene]-2,2'-diylbis[diphenylphosphine]
 DR 76144-87-1
 MF C44 H32 P2
 SR CA
 LC STN Files: AGRICOLA, BEILSTEIN*, BIOSIS, CA, CAPLUS, CASREACT,
 CHEMCATS,
 CHEMINFORMRX, CHEMLIST, CIN, CSCHEM, GMELIN*, MRCK*, PROMT,
 TOXCENTER,
 USPAT2, USPATFULL
 (*File contains numerically searchable property data)



FILE 'HCAPLUS' ENTERED AT 15:01:22 ON 13 JAN 2010
 L22 776 SEA SPE=ON ABB=ON PLU=ON L20 OR L21
 L23 0 SEA SPE=ON ABB=ON PLU=ON L22 AND (ASYMMETRIC
 DEHYDROGENATION
 ?)
 L24 57 SEA SPE=ON ABB=ON PLU=ON L22 AND (ASYMMETRIC
 HYDROGENATION?)

FILE 'HCAPLUS' ENTERED AT 15:02:45 ON 13 JAN 2010
 D L1 IT
 L25 37 SEA SPE=ON ABB=ON PLU=ON L24 AND (PY<=2004 OR
 AY<=2004 OR
 PRY<=2004)
 L26 24 SEA SPE=ON ABB=ON PLU=ON L25 AND (RUTHENIUM?)
 L27 24 SEA SPE=ON ABB=ON PLU=ON L26 AND (PY<=2004 OR
 AY<=2004 OR
 PRY<=2004)
 D L27 TI 1-24

L27 ANSWER 12 OF 24 HCAPLUS COPYRIGHT 2010 ACS on STN
 TI Ortho substituted chiral phosphines and phosphinites and their use
 in
 asymmetric catalytic reactions
 GI



I

AB 3,3'-Substituted chiral biaryl phosphine and phosphinite ligands,
 I (X, X' = independently (un)substituted alkyl, (un)substituted
 aryl, alkoxy, organothio, diorganoamido, alkoxy carbonyl, halo,
 organosilyl, diorganophosphonyl, dialkoxyphosphino; Z, Z1 =
 independently (un)substituted alkyl, (un)substituted aryl, alkoxy,

organothio, diorganoamido, alkoxycarbonyl, halo, organosilyl, diorganophosphonyl, dialkoxyphosphino, bridging group, etc.; Z', Z'', Z1', Z1'' = independently H, (un)substituted alkyl, (un)substituted aryl, alkoxy, organothio, diorganoamido, alkoxycarbonyl, halo, organosilyl, diorganophosphonyl, dialkoxyphosphino, bridging group, etc.; Y, Y' = O, CH₂, NH, S, a bond between carbon and phosphorus, etc.; T, T' = (un)substituted alkyl, (un)substituted aryl, alkoxy, etc.) and metal complexes based on such chiral ligands useful in asym. catalysis are disclosed. The metal complexes are useful as catalysts in asym. reactions, such as, hydrogenation, hydride transfer, allylic alkylation, hydrosilylation, hydroboration, hydrovinylation, hydroformylation, isomerization, cyclopropanation, Diels-Alder reaction, Heck reaction, isomerization, Aldol reaction, Michael addition, epoxidn., Kinetic resolution and [m + n] cycloaddn. The metal complexes are particularly effective in Ru-catalyzed asym. hydrogenation of beta-ketoesters to beta-hydroxyesters and Ru-catalyzed asym. hydrogenation of enamides to beta amino acids. Thus, (R)-3,3'-diphenyl-2,2'-bis(diphenylphosphinoxy)-1,1'-binaphthyl was prepared in five steps starting from (R)-BINOL.

ACCESSION NUMBER: 2002:391724 HCAPLUS Full-text
DOCUMENT NUMBER: 136:401880
TITLE: Ortho substituted chiral phosphines and phosphinites
and their use in asymmetric catalytic reactions
INVENTOR(S): Zhang, Xumu
PATENT ASSIGNEE(S): The Penn State Research Foundation, USA
SOURCE: PCT Int. Appl., 122 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002040491	A1	20020523	WO 2001-US43779	
20011116 <--				
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW			
RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			

CA 2427579	A1	20020523	CA 2001-2427579
20011116 <--			
CA 2427579	C	20091103	
AU 2002016719	A	20020527	AU 2002-16719
20011116 <--			
US 20020128501	A1	20020912	US 2001-991261
20011116 <--			
US 6653485	B2	20031125	
EP 1341797	A1	20030910	EP 2001-996543
20011116 <--			
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,			
IE, SI, LT, LV, FI, RO, MK, CY, AL, TR			
JP 2004513950	T	20040513	JP 2002-543499
20011116 <--			
JP 4167899	B2	20081022	
CN 1610688	A	20050427	CN 2001-819067
20011116 <--			
US 20040068126	A1	20040408	US 2003-660350
20030911 <--			
US 6855657	B2	20050215	
PRIORITY APPLN. INFO.:			US 2000-249537P P
20001117 <--			US 2001-301221P P
20010627 <--			US 2001-991261 A3
20011116 <--			WO 2001-US43779 W
20011116 <--			

L27 ANSWER 13 OF 24 HCAPLUS COPYRIGHT 2010 ACS on STN

TI New chiral diphosphine ligands designed to have a narrow dihedral angle in

the biaryl backbone

AB A series of novel optically active diphosphine ligands, (4,4'-bi-1,3-benzodioxole)-5,5'-diyl-bis(diarylphosphine)s, which are called SEGPHOS, has been designed and synthesized with dihedral angles in the Ru complexes being less than that in the corresponding BINAP-Ru complex. The stereorecognition abilities of SEGPHOS-Ru complex catalysts in the asym. catalytic hydrogenation of a wide variety of carbonyl compds. are superior to those observed with BINAP-Ru complex catalysts.

ACCESSION NUMBER: 2001:262994 HCAPLUS Full-text

DOCUMENT NUMBER: 135:76619

TITLE: New chiral diphosphine ligands designed to have a

narrow dihedral angle in the biaryl backbone

AUTHOR(S): Saito, Takao; Yokozawa, Tohru; Ishizaki, Takero;

Moroi, Takashi; Sayo, Noboru; Miura, Takashi; Kumobayashi, Hidenori

CORPORATE SOURCE: Central Research Laboratory, Takasago International

Corporation, Kanagawa, 254-0073, Japan

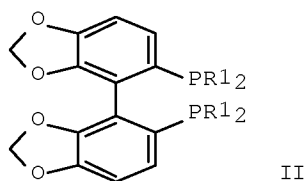
SOURCE: Advanced Synthesis & Catalysis (2001), 343(3), 264-267

CODEN: ASCAF7; ISSN: 1615-4150

PUBLISHER: Wiley-VCH Verlag GmbH
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 OTHER SOURCE(S): CASREACT 135:76619
 CC 23-7 (Aliphatic Compounds)
 Section cross-reference(s): 29, 78
 ST chiral diphosphine ligand prepn narrow dihedral angle biaryl backbone;
 bibenzodioxole diyl diarylphosphine ligand prepn ruthenium complexation; asym catalytic hydrogenation catalyst
 benzodioxolediyl
 diarylphosphine ruthenium complex prepn; carbonyl compd asym catalytic hydrogenation catalyst benzodioxolediyl diarylphosphine ruthenium; SEGPHOS ruthenium complex prepn asym hydrogenation catalyst

L27 ANSWER 15 OF 24 HCAPLUS COPYRIGHT 2010 ACS on STN
 TI Preparation of ruthenium chiral
 [4,4'-bi-1,3-benzodioxole]-5,5'-diyl diphosphine complexes as asymmetric hydrogenation catalysts

GI



AB Disclosed is a novel ruthenium-phosphine complex usable as the catalyst giving a high enantiomer excess in an asym. reaction and a method for producing the complex, the method ensuring the synthesis of the complex as a pure and single product without the necessity of refining. The ruthenium-phosphine complex is represented by the general formula $[\{RuX(L)\}_2(\mu-X)_3] - [(R_2)_2NH_2]^+$ (I) wherein R_2 represents a hydrogen atom, an alkyl group having 1-5 carbon atoms, a cycloalkyl group, a Ph group which may have a substituted group or a benzyl group which may have a substituted group and L represents a diphosphine ligand (II) wherein R_1 represents a Ph group or a naphthyl group which may have a substituted group, a cyclohexyl group or a cyclopentyl group and X represents a halogen atom. The method for preparing a ruthenium-phosphine complex represented by the above general formula I was characterized in that a ruthenium complex $[RuX(arene)(L)]X$ (wherein X , arene, L and R_1 are the same as defined above) and an ammonium salt $(R_2)_2NH \cdot RX$ (wherein X and R_2 are the same as defined above) were used as starting material and are reacted with each other. Thus, $[\{RuCl((R)-SEGPHOS)\}_2(\mu-Cl)_3][Me_2NH_2]$ (SEGPHOS = II, $R_1 = Ph$) was prepared from $[RuCl_2(benzene)]_2$ and $Me_2NH \cdot HCl$ in 95% yield and was shown to catalyze the hydrogenation of 2-oxopropanol to 1,2-dihydroxypropanol in 95% yield with 98% ee.

ACCESSION NUMBER: 1999:631421 HCAPLUS Full-text

DOCUMENT NUMBER: 131:251749
 TITLE: Preparation of ruthenium chiral
 [4,4'-bi-1,3-benzodioxole]-5,5'-diylidiphosphine
 complexes as asymmetric
 hydrogenation catalysts
 INVENTOR(S): Sayo, Noboru; Saito, Takao; Yokozawa, Tohru
 PATENT ASSIGNEE(S): Takasago International Corporation, Japan
 SOURCE: Eur. Pat. Appl., 11 pp.
 CODEN: EPXXDW
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 945457	A2	19990929	EP 1999-400657	
19990317 <--				
EP 945457	A3	20001213		
EP 945457	B1	20040811		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,				
IE, SI, LT, LV, FI, RO				
JP 11269185	A	19991005	JP 1998-92174	
19980323 <--				
JP 3549390	B2	20040804		
US 6313317	B1	20011106	US 1999-273260	
19990322 <--				
PRIORITY APPLN. INFO.:			JP 1998-92174	A
19980323 <--				

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

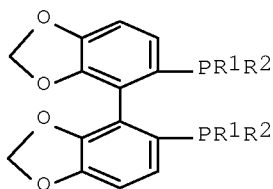
L27 ANSWER 18 OF 24 HCAPLUS COPYRIGHT 2010 ACS on STN
 TI Asymmetric hydrogenation catalyzed by BINAP-
 ruthenium complexes and its application
 AB A review with 30 refs. on preparation of BINAP derivs. and
 application of BINAP-Ru complex-catalyzed asym. hydrogenation
 reactions of ketones having functional groups at the α - or β -
 positions and olefins such as allylic alcs. and α,β -unsatd.
 carboxylic acids to synthesis of drug intermediates and perfumes.
 ACCESSION NUMBER: 1998:545875 HCAPLUS Full-text
 DOCUMENT NUMBER: 129:161156
 ORIGINAL REFERENCE NO.: 129:32801a,32802a
 TITLE: Asymmetric hydrogenation catalyzed
 by BINAP-ruthenium complexes and its
 application
 AUTHOR(S): Miura, Takashi
 CORPORATE SOURCE: Fine Aromachem. Res. Lab., Takasago Int. Corp.,
 Hiratsuka, 254-0073, Japan
 SOURCE: Kagaku to Kogyo (Osaka) (1998), 72(8),
 346-335
 CODEN: KKGOAG; ISSN: 0368-5918
 PUBLISHER: Osaka Koken Kyokai
 DOCUMENT TYPE: Journal; General Review
 LANGUAGE: Japanese

CC 21-0 (General Organic Chemistry)
 Section cross-reference(s): 29, 67
 ST review asym hydrogenation catalyst BINAP
 ruthenium; ketone asym hydrogenation BINAP
 ruthenium review; olefin asym hydrogenation
 BINAP ruthenium review; allylic alc hydrogenation BINAP
 ruthenium review; unsatd carboxylate hydrogenation BINAP
 ruthenium review

L27 ANSWER 19 OF 24 HCAPLUS COPYRIGHT 2010 ACS on STN

TI Preparation of chiral (5,6), (5',6')-bis(3,4-methylenedioxy)biphenyl-2,2'-diylphosphine compound, intermediate for preparing the same, transition
 metal complex having the same diphosphine compound as ligand and asymmetric hydrogenation catalyst

GI



I

AB The present invention provides a novel diphosphine compound of the formula (I; R¹ and R² represent independently cycloalkyl, unsubstituted or substituted Ph, or five-membered heteroarom. ring residue). The compound is useful as a ligand having the excellent performance (diastereoselectivity, enantioselectivity, and catalytic activity) for an asym. reaction, in particular, asym. hydrogenation catalyst. Thus, diphenyl[2-iodo-(3,4)-methylenedioxyphenyl]phosphine (preparation given) was coupled to each other in the presence of Cu powder in DMF at 140° for 8 h to give (±)-[(5,6) (5',6')-bis(methylenedioxy)biphenyl-2,2'-diyl]bis(diphenylphosphine oxide) [(±)-II]. Optical resolution of the latter compound by cyclocondensation with (-)-dibenzoyl-L-tartaric acid in EtOAc at 60° for 30 min followed by alkali hydrolysis gave (-)-II, which was reduced by SiCl₄ in the presence of dimethylaniline in toluene at 100° for 4 h to give (-)-I (R¹ = R² = Ph) [(-)-SEGPPOS]. [Ru(COD)Cl₂]₂, (-)-SEGPPOS, Et₃N, and toluene was refluxed for 15 h under N followed distilling off the solvent and vacuum drying to give the catalyst Ru₂Cl₄[(-)-SEGPPOS]₂Net₃. The latter catalyst, 2-oxo-1-propanol, and MeOH was autoclaved with stirring at H pressure 10 atm and 65° for 16 to give optically active 1,2-propanediol of 97.4%ee in 99.8%.

ACCESSION NUMBER: 1998:466349 HCAPLUS Full-text
 DOCUMENT NUMBER: 129:124055
 ORIGINAL REFERENCE NO.: 129:25383a,25386a
 TITLE: Preparation of chiral
 (5,6), (5',6')-bis(3,4-methylenedioxy)biphenyl-

2,2'-

diylphosphine compound, intermediate for
preparing the same, transition metal complex having the same
diphosphine compound as ligand and asymmetric
hydrogenation catalyst
INVENTOR(S): Saito, Takao; Yokozawa, Tohru; Xiaoyaong,
Zhang; Sayo, Noboru
PATENT ASSIGNEE(S): Takasago International Corp., Japan
SOURCE: Eur. Pat. Appl., 17 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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EP 850945	A1	19980701	EP 1997-403152	
19971224 <--				
EP 850945	B1	20021127		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,				
IE, SI, LT, LV, FI, RO				
JP 10182678	A	19980707	JP 1996-359818	
19961226 <--				
JP 3148136	B2	20010319		
US 5872273	A	19990216	US 1997-996405	
19971222 <--				
PRIORITY APPLN. INFO.:			JP 1996-359818	A
19961226 <--				

L27 ANSWER 21 OF 24 HCAPLUS COPYRIGHT 2010 ACS on STN

TI Asymmetric synthesis by metal BINAP catalysts

AB This article covers catalytic asym. syntheses affected by BINAP (R or S 2,2'-diphenylphosphino-1,1'-binaphthyl) ligand. The atropisomeric ligand is outstanding in its extremely high enantioselective recognition of hydrogen, when coordinated to rhodium or ruthenium metal. A unique chiral multiplication (asym. catalysis) derived from the isomerization of allylic amines to enamines by Rh-BINAP catalysis is reviewed from discovery to industrialization. The catalyst converted isoprenoid allylic amine to citronellal enamine in perfect selectivities (99% yield and 98% enantiomer excess) and activity (TON > 400 000) that promised the com. manufacturing of enantiomerically pure terpene aldehydes. The industrial application of the highly sensitive and expensive Rh-BINAP catalyst for the production of 1500 t/y scale of chiral terpene compds. is introduced with some tech. know how. A series of new ruthenium BINAP complexes was prepared and evaluated for asym. hydrogenation. Neutral Ru-BINAP dicarboxylato complexes catalyzed the hydrogenation of activated carbon-carbon double bonds enantioselectively. Prochiral unsatd. substrates including α -(acylamino)acrylic acids, allylic alcs., α,β -unsatd. carboxylic acids and cyclic enamides were easily reduced to give saturated products in quant. yields with 90-99% enantiomer

excesses. Cationic Ru-BINAP complexes catalyzed the hydrogenation of functionalized ketones enantioselectively. Prochiral ketones bearing hetero atom-containing functional groups at α , β or γ position were smoothly reduced affording corresponding alcs. in quant. yields with high enantiomeric excesses. Industrial applications of these methodologies for pharmaceuticals and new materials are summarized;153 refs.

ACCESSION NUMBER: 1995:699421 HCAPLUS Full-text
DOCUMENT NUMBER: 123:255801
ORIGINAL REFERENCE NO.: 123:45747a,45750a
TITLE: Asymmetric synthesis by metal BINAP catalysts
AUTHOR(S): Akutagawa, Susumu
CORPORATE SOURCE: Takasago International Corporation, 3-19-22, Takanawa,
Minatoku, Tokyo, 222, Japan
SOURCE: Applied Catalysis, A: General (1995),
128(2), 171-207
CODEN: ACAGE4; ISSN: 0926-860X
PUBLISHER: Elsevier
DOCUMENT TYPE: Journal; General Review
LANGUAGE: English
CC 21-0 (General Organic Chemistry)
Section cross-reference(s): 63
IT 98327-87-8, BINAP
RL: CAT (Catalyst use); USES (Uses)
(asym. synthesis by metal BINAP catalysts)
OS.CITING REF COUNT: 105 THERE ARE 105 CAPLUS RECORDS THAT CITE
THIS

RECORD (105 CITINGS)

L27 ANSWER 22 OF 24 HCAPLUS COPYRIGHT 2010 ACS on STN
TI Asymmetric hydrogenation with Ru-BINAP catalysts
AB A review with 10 refs. on the scope of Ru-BINAP catalysts for allylic alcs., unsatd. carboxylic acids, enamides, and substituted ketones; preparation of Ru-BINAP catalysts; and com. applications for α -tocopherol side-chain and β -lactam intermediates.

ACCESSION NUMBER: 1993:580117 HCAPLUS Full-text
DOCUMENT NUMBER: 119:180117
ORIGINAL REFERENCE NO.: 119:32187a,32190a
TITLE: Asymmetric hydrogenation with
Ru-BINAP catalysts
AUTHOR(S): Akutagawa, S.
CORPORATE SOURCE: Takasago Res. Inst., Inc., Tokyo, Japan
SOURCE: Chirality Ind. (1992), 325-39. Editor(s):
Collins, Andrew N.; Sheldrake, G. N.; Crosby,
J.

Wiley: Chichester, UK.
CODEN: 59DGAP
DOCUMENT TYPE: Conference; General Review
LANGUAGE: English
CC 22-0 (Physical Organic Chemistry)
Section cross-reference(s): 45, 78

L27 ANSWER 23 OF 24 HCAPLUS COPYRIGHT 2010 ACS on STN
TI Quantitative expression of dynamic kinetic resolution of chirally

labile

enantiomers: stereoselective hydrogenation of 2-substituted 3-oxo carboxylic esters catalyzed by BINAP-ruthenium(II) complexes

AB Hydrogenation of chirally unstable 2-substituted 3-oxo carboxylic esters gives a mixture of four stereoisomeric hydroxy esters. Use of BINAP-Ru(II) complex catalysts allows selective production of one stereoisomer among four possible isomers. The stereoselectivity obtained by the dynamic kinetic resolution depends on facile in situ racemization of the substrates, efficient chirality recognition ability of the catalysts, and the structures of the ketonic substrates. The factors controlling the efficiency of the stereoselective hydrogenation are exptl. determined by reaction of racemic oxo esters using enantiomerically pure and racemic BINAP complexes. Quant. expression of the dynamic kinetic resolution has been made by defining the product partition coeffs. (w, x, y, and z), the relative reactivities of the enantiomeric substrates (kfast/kslow), and the relative ease with which stereoinversion and hydrogenation take place (kinv/kfast). The validity of the equations has been demonstrated by the graphical exhibition of the enantioselectivity and diastereoselectivity as a function of conversion of the substrates.

ACCESSION NUMBER: 1993:80322 HCAPLUS Full-text

DOCUMENT NUMBER: 118:80322

ORIGINAL REFERENCE NO.: 118:14113a,14116a

TITLE: Quantitative expression of dynamic kinetic resolution

of chirally labile enantiomers:

stereoselective

hydrogenation of 2-substituted 3-oxo carboxylic

esters

catalyzed by BINAP-ruthenium(II) complexes

AUTHOR(S): Kitamura, M.; Tokunaga, M.; Noyori, R.

CORPORATE SOURCE: Dep. Chem., Nagoya Univ., Nagoya, 464-01, Japan

SOURCE: Journal of the American Chemical Society (1993), 115(1), 144-52

CODEN: JACSAT; ISSN: 0002-7863

DOCUMENT TYPE: Journal

LANGUAGE: English

L27 ANSWER 24 OF 24 HCAPLUS COPYRIGHT 2010 ACS on STN

TI New 2,2'-bis(diphenylphosphino)-1,1'-binaphthylruthenium(II) complexes for

asymmetric catalytic hydrogenation

AB A review with 35 refs. 2,2'-Bis(diphenylphosphino)-1,1'-binaphthyl (BINAP) Ru(II) complexes were prepared in high yields and their mol. structures were determined through spectroscopic methods and single-crystal X-ray anal. These complexes were used as catalysts for the asym. hydrogenation of enamides, allylic and homoallylic alcs., α,β -unsatd. carboxylic acids, and various functionalized ketones in exceptionally high enantiomeric excesses. The stereoselectivity of asym. hydrogenation of racemic 2-substituted β -keto esters, which proceeds by dynamic kinetic resolution, was extensively studied. Diastereoselectivity of the hydrogenation depends largely on the solvent and the halide anion, as well as on the substituents of the four Ph rings of the BINAP

ligands. The optical purities of the products are less sensitive to these factors. Highly stereoselective hydrogenation of Me 2-benzamidomethyl-3-oxobutanoate and an efficient synthesis of new chiral bis(triarylphosphine) ligands were accomplished.

ACCESSION NUMBER: 1993:21717 HCAPLUS Full-text
DOCUMENT NUMBER: 118:21717
ORIGINAL REFERENCE NO.: 118:4081a,4084a
TITLE: New 2,2'-bis(diphenylphosphino)-1,1'-
binaphthylruthenium(II) complexes for
asymmetric catalytic hydrogenation
AUTHOR(S): Takaya, Hidemasa; Ohta, Tetsuo; Mashima,
Kazushi
CORPORATE SOURCE: Fac. Eng., Kyoto Univ., Kyoto, 606, Japan
SOURCE: Advances in Chemistry Series (1992),
230(Homogeneous Transition Met. Catal. React.),
123-42
CODEN: ADCSAJ; ISSN: 0065-2393
DOCUMENT TYPE: Journal; General Review
LANGUAGE: English
CC 21-0 (General Organic Chemistry)
ST review ruthenium BINAP catalyst asym
hydrogenation
IT Hydrogenation catalysts
(stereoselective, ruthenium BINAP complexes)
IT 7440-18-8D, Ruthenium, BINAP complexes 98327-87-8D,
BINAP, ruthenium complexes
RL: CAT (Catalyst use); USES (Uses)
(catalysts, for asym. hydrogenation)

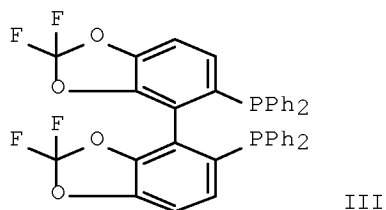
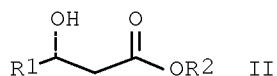
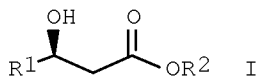
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D L28
L29 50 SEA SSS SAM L28
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L34 4387 SEA SPE=ON ABB=ON PLU=ON L30
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7,9,10,12,13,15,18,19,21,22,23,24

L1 STRUCTURE UPLOADED
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L3 57 S L1 SSS FULL

FILE 'HCAPLUS' ENTERED AT 10:02:45 ON 26 JAN 2010
L4 164 S L3

L5 29 S L4 AND RUTHENIUM
 L6 24 S L5 AND HYDROGENATION?
 L7 8 S L6 AND (PY<=2003 OR AY<=2003 OR PRY<=2003)
 L7 ANSWER 1 OF 8 HCAPLUS COPYRIGHT 2010 ACS on STN
 TI Stereoselective catalytic hydrogenation process for the
 preparation of (S)- or (R)-4-halo-3-hydroxybutyrate esters from the
 corresponding 4-halo-3-oxobutyrate
 GI



AB Enantiomerically pure (S)- or (R)-4-halo-3-hydroxybutyrate [I;
 II; R1 = CH2X, CHX2, CX3; X = Cl and/or Br; R2 = C1-6 alkyl, C3-8
 cycloalkyl, (un)substituted aryl, (un)substituted aralkyl; e.g.,
 Et (3S)-4-chloro-3-hydroxybutyrate] are prepared in high yield and
 selectivity by the asym. hydrogenation of 4-halo-3-oxobutyrate
 esters R1C(:O)CH2CO2R2 (e.g., Et 4-chloro-3-oxobutyrate) in the
 presence of a catalyst of a ruthenium complex comprising a chiral
 diphosphine ligand (III).

ACCESSION NUMBER: 2005:393998 HCAPLUS Full-text
 DOCUMENT NUMBER: 142:429938
 TITLE: Stereoselective catalytic hydrogenation
 process for the preparation of (S)- or
 (R)-4-halo-3-hydroxybutyrate esters from the
 corresponding 4-halo-3-oxobutyrate
 PATENT ASSIGNEE(S): Lonza AG, Switz.
 SOURCE: Eur. Pat. Appl., 9 pp.
 CODEN: EPXXDW
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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EP 1528053	A1	20050504	EP 2003-24865	
20031031 <--				
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,				

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IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK
AU 2004291249 A1 20050602 AU 2004-291249
20041022 <--
CA 2541716 A1 20050602 CA 2004-2541716
20041022 <--
WO 2005049545 A1 20050602 WO 2004-EP11971
20041022 <--
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA,
CH,
CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB,
GD,
GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ,
LC,
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA,
NI,
NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL,
SY,
TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,
ZW
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW,
AM,
AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE,
DK,
EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO,
SE,
SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR,
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SN, TD, TG
EP 1682481 A1 20060726 EP 2004-790763
20041022 <--
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,
PT,
IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK
CN 1874989 A 20061206 CN 2004-80032075
20041022 <--
BR 2004016133 A 20070102 BR 2004-16133
20041022 <--
JP 2007509874 T 20070419 JP 2006-537143
20041022 <--
NZ 546642 A 20081128 NZ 2004-546642
20041022 <--
KR 2006095769 A 20060901 KR 2006-708041
20060426 <--
NO 2006002131 A 20060530 NO 2006-2131
20060512 <--
IN 2006DN03081 A 20070810 IN 2006-DN3081
20060529 <--
US 20070078279 A1 20070405 US 2006-577385
20060703 <--
PRIORITY APPLN. INFO.: EP 2003-24865 A
2003103

complex catalysts with chiral phosphine ligands
GI

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT
*

AB Processes for the preparation of compds., e. g. I, having a chiral carbon substituted with an amine are disclosed. The processes include admixing a ketone, e. g. II, with an amine, e. g. III in the presence of a catalyst having a chiral phosphine ligand, e. g. IV, and an acid. The admixt. can also contain a reducing additive. The admixt. is then exposed to hydrogen to directly and asym. aminate the ketone.

ACCESSION NUMBER: 2004:570037 HCAPLUS Full-text
DOCUMENT NUMBER: 141:123759
TITLE: Catalytic asymmetric reductive amination of ketones
via transition metal complex catalysts with chiral phosphine ligands

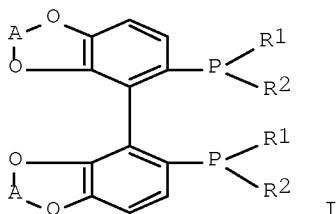
INVENTOR(S): Zhang, Xumu
PATENT ASSIGNEE(S): Penn State Research Foundation, USA
SOURCE: PCT Int. Appl., 22 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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WO 2004058982	A2	20040715	WO 2003-US34955	
20031105 <--				
WO 2004058982	A3	20041229		
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RW:	BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			

AU 2003294243 A1 20040722 AU 2003-294243
 20031105 <--
 US 20040147762 A1 20040729 US 2003-701081
 20031105 <--
 PRIORITY APPLN. INFO.: US 2002-424663P P
 20021106 <--
 WO 2003-US34955 W
 20031105 <--
 ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

L7 ANSWER 3 OF 8 HCAPLUS COPYRIGHT 2010 ACS on STN
 TI Preparation of bis(alkylenedioxy)biphenyldiylldiphosphines, their
 complexes
 with transition metals, and their use as asymmetric synthesis
 catalysts
 GI



AB The invention relates to new optically pure or racemic
 bis(alkylenedioxy)biphenyldiylldiphosphines I [R1 and R2 are (C5-
 C7)cycloalkyl, various (un)substituted Ph, or a 5-membered
 heteroaryl; A is CH2CH2 or CF2], and intermediates in their
 preparation. The invention also relates to I as ligands for
 transition metal complexes, which are useful as chiral catalysts
 in asym. catalysis, especially asym. hydrogenation and carbon-
 carbon coupling. Thus, prepared ligand (S)-I (R1 = R2 = Ph, A =
 CH2CH2) and (1,5-cyclooctadiene)bis(methylallyl)ruthenium in
 acetone were reacted with HBr in MeOH to generate a chiral
 catalyst in situ. Hydrogenation of MeCOCH2CO2Me (4 bar at 50° in
 MeOH, 24 h) in the presence of the catalyst afforded (S)-
 MeCH(OH)CH2CO2Me in >99% e.e.

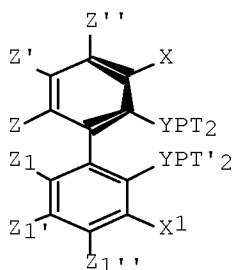
ACCESSION NUMBER: 2003:262780 HCAPLUS Full-text
 DOCUMENT NUMBER: 138:280367
 TITLE: Preparation of
 bis(alkylenedioxy)biphenyldiylldiphosphines,
 their
 complexes with transition metals, and their use
 as
 asymmetric synthesis catalysts
 INVENTOR(S): Duprat De Paule, Sebastien; Champion, Nicolas;
 Vidal,
 Virginie; Genet, Jean Pierre; Dellis, Philippe
 PATENT ASSIGNEE(S): Synkem, Fr.
 SOURCE: Fr. Demande, 29 pp.
 CODEN: FRXXBL

DOCUMENT TYPE: Patent
 LANGUAGE: French
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
FR 2830254	A1	20030404	FR 2001-12499	
20010928 <--				
FR 2830254	B1	20040917		
CA 2462045	A1	20030410	CA 2002-2462045	
20020916 <--				
WO 2003029259	A1	20030410	WO 2002-FR3146	
20020916 <--				
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RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
AU 2002362477	A1	20030414	AU 2002-362477	
20020916 <--				
EP 1436304	A1	20040714	EP 2002-800152	
20020916 <--				
EP 1436304	B1	20050309		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK				
BR 2002012763	A	20041013	BR 2002-12763	
20020916 <--				
CN 1558908	A	20041229	CN 2002-818813	
20020916 <--				
CN 1329405	C	20070801		
JP 2005504129	T	20050210	JP 2003-532507	
20020916 <--				
JP 4342942	B2	20091014		
AT 290540	T	20050315	AT 2002-800152	
20020916 <--				
PT 1436304	E	20050729	PT 2002-800152	
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ES 2238635	T3	20050901	ES 2002-800152	
20020916 <--				
KR 876718	B1	20081231	KR 2004-703557	
20040310 <--				

US 20040260101	A1	20041223	US 2004-490409
20040323 <--			
US 6878665	B2	20050412	
IN 2004DN00743	A	20060721	IN 2004-DN743
20040323 <--			
NO 2004001234	A	20040324	NO 2004-1234
20040324 <--			
MX 2004002943	A	20041122	MX 2004-2943
20040329 <--			
PRIORITY APPLN. INFO.:			
20010928 <--			FR 2001-12499 A
			WO 2002-FR3146 W
20020916 <--			

L7 ANSWER 4 OF 8 HCAPLUS COPYRIGHT 2010 ACS on STN
 TI Ortho substituted chiral phosphines and phosphinites and their use
 in
 asymmetric catalytic reactions
 GI



I

AB 3,3'-Substituted chiral biaryl phosphine and phosphinite ligands, I (X, X' = independently (un)substituted alkyl, (un)substituted aryl, alkoxy, organothio, diorganoamido, alkoxy carbonyl, halo, organosilyl, diorganophosphonyl, dialkoxyphosphino; Z, Z1 = independently (un)substituted alkyl, (un)substituted aryl, alkoxy, organothio, diorganoamido, alkoxy carbonyl, halo, organosilyl, diorganophosphonyl, dialkoxyphosphino, bridging group, etc.; Z', Z'', Z1', Z1'' = independently H, (un)substituted alkyl, (un)substituted aryl, alkoxy, organothio, diorganoamido, alkoxy carbonyl, halo, organosilyl, diorganophosphonyl, dialkoxyphosphino, bridging group, etc.; Y, Y' = O, CH2, NH, S, a bond between carbon and phosphorus, etc.; T, T' = (un)substituted alkyl, (un)substituted aryl, alkoxy, etc.) and metal complexes based on such chiral ligands useful in asym. catalysis are disclosed. The metal complexes are useful as catalysts in asym. reactions, such as, hydrogenation, hydride transfer, allylic alkylation, hydrosilylation, hydroboration, hydrovinylation, hydroformylation, hydroformylation, olefin metathesis,

hydrocarboxylation, isomerization, cyclopropanation, Diels-Alder reaction, Heck reaction, isomerization, Aldol reaction, Michael addition, epoxidn., Kinetic resolution and [m + n] cycloaddn. The metal complexes are particularly effective in Ru-catalyzed asym. hydrogenation of beta-ketoesters to beta-hydroxyesters and Ru-catalyzed asym. hydrogenation of enamides to beta amino acids. Thus, (R)-3,3'-diphenyl-2,2'-bis(diphenylphosphinoxy)-1,1'-binaphthyl was prepared in five steps starting from (R)-BINOL.

ACCESSION NUMBER: 2002:391724 HCAPLUS Full-text
DOCUMENT NUMBER: 136:401880
TITLE: Ortho substituted chiral phosphines and phosphinites
and their use in asymmetric catalytic reactions
INVENTOR(S): Zhang, Xumu
PATENT ASSIGNEE(S): The Penn State Research Foundation, USA
SOURCE: PCT Int. Appl., 122 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002040491	A1	20020523	WO 2001-US43779	
20011116 <--				
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CA 2427579	A1	20020523	CA 2001-2427579	
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AU 2002016719	A	20020527	AU 2002-16719	
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US 20020128501	A1	20020912	US 2001-991261	
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US 6653485	B2	20031125		
EP 1341797	A1	20030910	EP 2001-996543	
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JP 2004513950	T	20040513	JP 2002-543499
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JP 4167899	B2	20081022	
CN 1610688	A	20050427	CN 2001-819067
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US 20040068126	A1	20040408	US 2003-660350
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US 6855657	B2	20050215	
PRIORITY APPLN. INFO.:			US 2000-249537P P
20001117 <--			US 2001-301221P P
20010627 <--			US 2001-991261 A3
20011116 <--			WO 2001-US43779 W
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L7 ANSWER 5 OF 8 HCAPLUS COPYRIGHT 2010 ACS on STN

TI New chiral diphosphine ligands designed to have a narrow dihedral angle in the biaryl backbone

AB A series of novel optically active diphosphine ligands, (4,4'-bi-1,3-benzodioxole)-5,5'-diyl-bis(diarylphosphine)s, which are called SEGPPOS, has been designed and synthesized with dihedral angles in the Ru complexes being less than that in the corresponding BINAP-Ru complex. The stereorecognition abilities of SEGPPOS-Ru complex catalysts in the asym. catalytic hydrogenation of a wide variety of carbonyl compds. are superior to those observed with BINAP-Ru complex catalysts.

ACCESSION NUMBER: 2001:262994 HCAPLUS Full-text

DOCUMENT NUMBER: 135:76619

TITLE: New chiral diphosphine ligands designed to have a narrow dihedral angle in the biaryl backbone

AUTHOR(S): Saito, Takao; Yokozawa, Tohru; Ishizaki, Takero; Moroi, Takashi; Sayo, Noboru; Miura, Takashi; Kumobayashi, Hidenori

CORPORATE SOURCE: Central Research Laboratory, Takasago International Corporation, Kanagawa, 254-0073, Japan

SOURCE: Advanced Synthesis & Catalysis (2001), 343(3), 264-267

PUBLISHER: CODEN: ASCAF7; ISSN: 1615-4150

DOCUMENT TYPE: Wiley-VCH Verlag GmbH

LANGUAGE: Journal

OTHER SOURCE(S): English

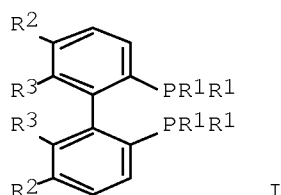
CC 23-7 (Aliphatic Compounds)

Section cross-reference(s): 29, 78

ST chiral diphosphine ligand prepn narrow dihedral angle biaryl backbone; bibenzodioxole diyl diarylphosphine ligand prepn ruthenium complexation; asym catalytic hydrogenation catalyst benzodioxolediyl diarylphosphine ruthenium complex prepn; carbonyl compd asym catalytic hydrogenation catalyst

benzodioxole-diyl diarylphosphine ruthenium; SEGPPOS
 ruthenium complex prepn asym hydrogenation catalyst
 IT Carbonyl compounds (organic), reactions
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (SEGPPOS ruthenium complex catalyzed asym.
 hydrogenation of)

L7 ANSWER 6 OF 8 HCAPLUS COPYRIGHT 2010 ACS on STN
 TI Preparation of ruthenium iodo complexes containing optically
 active bidentate phosphine ligands as stereoselective
 hydrogenation catalysts for 4-methylene-2-oxetanone
 GI



AB Provided are ruthenium iodo complexes containing optically active bidentate phosphine ligands, $[\text{Ru}-(\text{I})_q-(\text{T}1)_n(\text{sol})_r(\text{L})]_m(\text{T}2)_p(\text{I})_s$ ($\text{T}1$ = carboxylate anion, sol = polar solvent, L = optically active bidentate phosphine ligand, $\text{T}2$ = anion different from halide and carboxylate anion, $n = 0-1$, $r = 0, 3, 4$, $m = 1-2$, $q = 0-1$, $m = 2, 1$, or 1.5 , $p = 0$ or 1 , $s = 0-2$). The optically active bidentate phosphine ligands include diphosphines I ($\text{R}1$ = various (un)substituted aryl groups; $\text{R}2, \text{R}3 = \text{H}$, halo, $\text{C}1-4$ alkyl, $\text{C}1-4$ alkoxy, or $\text{R}2\text{R}3 = 5-$ or $6-$ membered ring). The complexes may be prepared by reaction of $[\text{RuI}(\text{arene})(\text{L})]\text{I}$ or $[\text{RuI}_2(\text{arene})]_2$ with an alkali or alkaline earth metal carboxylate salt in a polar non-nitrile-type solvent. The ruthenium complexes are catalysts for the asym. hydrogenation of 4-methylene-2-oxetanone to give chiral 4-methyl-2-oxetanone. Thus, reaction of $[\text{RuI}_2(\text{p-cymene})]_2$ with (S)-BINAP (BINAP = 2,2'-bis(diphenylphosphino)1,1'-binaphthyl) in MeOH under N_2 at 55° for 16 h, followed by removal of MeOH, and further reaction with NaOAc in $\text{CH}_2\text{Cl}_2/\text{H}_2\text{O}$ under N_2 for 16 h afforded $[\text{RuI}(\text{MeCO}_2)\{(\text{S})\text{-BINAP}\}]_2$ in 97% yield. Hydrogenation of 4-methylene-2-oxetanone in THF with added deaerated H_2O in the presence of $[\text{RuI}(\text{MeCO}_2)\{(\text{S})\text{-BINAP}\}]_2$ afforded (R)-4-methyl-2-oxetanone in 94% e.e.

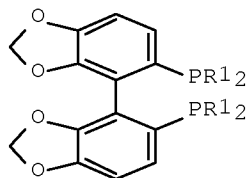
ACCESSION NUMBER: 1999:722753 HCAPLUS [Full-text](#)
 DOCUMENT NUMBER: 131:331431
 TITLE: Preparation of ruthenium iodo complexes containing optically active bidentate phosphine ligands as stereoselective hydrogenation catalysts for 4-methylene-2-oxetanone
 INVENTOR(S): Okeda, Yoshiki; Hashimoto, Tsutomu; Hori, Yoji; Hagiwara, Toshimitsu
 PATENT ASSIGNEE(S): Takasago International Corporation, Japan
 SOURCE: Eur. Pat. Appl., 57 pp.

DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

CODEN: EPXXDW

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 955303	A2	19991110	EP 1999-401120	
19990507 <--				
EP 955303	A3	20010103		
EP 955303	B1	20061108		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,				
IE, SI, LT, LV, FI, RO				
JP 11322734	A	19991124	JP 1998-142233	
19980508 <--				
JP 2000288399	A	20001017	JP 1999-93644	
19990331 <--				
JP 3640565	B2	20050420		
US 6043380	A	20000328	US 1999-307750	
19990510 <--				
EP 1041079	A2	20001004	EP 2000-400847	
20000328 <--				
EP 1041079	A3	20010103		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,				
IE, SI, LT, LV, FI, RO				

L7 ANSWER 7 OF 8 HCAPLUS COPYRIGHT 2010 ACS on STN
 TI Preparation of ruthenium chiral
 [4,4'-bi-1,3-benzodioxole]-5,5'-diylidiphosphine complexes as
 asymmetric
 hydrogenation catalysts
 GI



II

AB Disclosed is a novel ruthenium-phosphine complex usable as the catalyst giving a high enantiomer excess in an asym. reaction and a method for producing the complex, the method ensuring the synthesis of the complex as a pure and single product without the necessity of refining. The ruthenium-phosphine complex is represented by the general formula $[RuX(L)_2(\mu-X)_3] - [(R_2)_2NH_2]^+$ (I) wherein R₂ represents a hydrogen atom, an alkyl group having 1-5 carbon atoms, a cycloalkyl group, a Ph group which may have a

substituted group or a benzyl group which may have a substituted group and L represents a diphosphine ligand (II) wherein R1 represents a Ph group or a naphthyl group which may have a substituted group, a cyclohexyl group or a cyclopentyl group and X represents a halogen atom. The method for preparing a ruthenium - phosphine complex represented by the above general formula I was characterized in that a ruthenium complex [RuX(arene)(L)]X (wherein X, arene, L and R1 are the same as defined above) and an ammonium salt (R2)2NH·RX (wherein X and R2 are the same as defined above) were used as starting material and are reacted with each other. Thus, [{RuCl((R)-SEGPHOS)}2(μ-Cl)3][Me2NH2] (SEGPHOS = II, R1 = Ph) was prepared from [RuCl2(benzene)]2 and Me2NH·HCl in 95% yield and was shown to catalyze the hydrogenation of 2-oxopropanol to 1,2-dihydroxypropanol in 95% yield with 98% ee.

ACCESSION NUMBER: 1999:631421 HCAPLUS Full-text
DOCUMENT NUMBER: 131:251749
TITLE: Preparation of ruthenium chiral [4,4'-bi-1,3-benzodioxole]-5,5'-diyl diphosphine complexes as asymmetric hydrogenation catalysts
INVENTOR(S): Sayo, Noboru; Saito, Takao; Yokozawa, Tohru
PATENT ASSIGNEE(S): Takasago International Corporation, Japan
SOURCE: Eur. Pat. Appl., 11 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 945457	A2	19990929	EP 1999-400657	
19990317 <--				
EP 945457	A3	20001213		
EP 945457	B1	20040811		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,				
IE, SI, LT, LV, FI, RO				
JP 11269185	A	19991005	JP 1998-92174	
19980323 <--				
JP 3549390	B2	20040804		
US 6313317	B1	20011106	US 1999-273260	
19990322 <--				
PRIORITY APPLN. INFO.:			JP 1998-92174	A
19980323 <--				

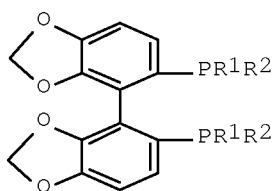
L7 ANSWER 8 OF 8 HCAPLUS COPYRIGHT 2010 ACS on STN

TI Preparation of chiral (5,6), (5',6')-bis(3,4-methylenedioxy)biphenyl-2,2'-

diylphosphine compound, intermediate for preparing the same, transition

metal complex having the same diphosphine compound as ligand and asymmetric hydrogenation catalyst

GI



I

AB The present invention provides a novel diphosphine compound of the formula (I; R1 and R2 represent independently cycloalkyl, unsubstituted or substituted Ph, or five-membered heteroarom. ring residue). The compound is useful as a ligand having the excellent performance (diastereoselectivity, enantioselectivity, and catalytic activity) for an asym. reaction, in particular, asym. hydrogenation catalyst. Thus, diphenyl[2-iodo-(3,4)-methylenedioxyphenyl]phosphine (preparation given) was coupled to each other in the presence of Cu powder in DMF at 140° for 8 h to give (±)-[(5,6)(5',6')-bis(methylenedioxy)biphenyl-2,2'-diyl]bis(diphenylphosphine oxide) [(±)-II]. Optical resolution of the latter compound by cyclocondensation with (-)-dibenzoyl-L-tartaric acid in EtOAc at 60° for 30 min followed by alkali hydrolysis gave (-)-II, which was reduced by SiCl4 in the presence of dimethylaniline in toluene at 100° for 4 h to give (-)-I (R1 = R2 = Ph) [(-)-SEGPPOS]. [Ru(COD)Cl2]2, (-)-SEGPPOS, Et3N, and toluene was refluxed for 15 h under N followed distilling off the solvent and vacuum drying to give the catalyst Ru2Cl4[(-)-SEGPPOS]2NEt3. The latter catalyst, 2-oxo-1-propanol, and MeOH was autoclaved with stirring at H pressure 10 atm and 65° for 16 to give optically active 1,2-propanediol of 97.4%ee in 99.8%.

ACCESSION NUMBER: 1998:466349 HCAPLUS Full-text
DOCUMENT NUMBER: 129:124055
ORIGINAL REFERENCE NO.: 129:25383a,25386a
TITLE: Preparation of chiral
(5,6),(5',6')-bis(3,4-methylenedioxy)biphenyl-
2,2'-

diylphosphine compound, intermediate for
preparing the

same, transition metal complex having the same
diphosphine compound as ligand and asymmetric
hydrogenation catalyst

INVENTOR(S): Saito, Takao; Yokozawa, Tohru; Xiaoyaong,
Zhang; Sayo,

Noboru

PATENT ASSIGNEE(S): Takasago International Corp., Japan
SOURCE: Eur. Pat. Appl., 17 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent
LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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      EP 850945          A1      19980701      EP 1997-403152
19971224 <--
      EP 850945          B1      20021127
      R:  AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,
PT,
      IE, SI, LT, LV, FI, RO
      JP 10182678        A       19980707        JP 1996-359818
19961226 <--
      JP 3148136        B2      20010319
      US 5872273        A       19990216        US 1997-996405
19971222 <--
PRIORITY APPLN. INFO.:          JP 1996-359818      A
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L13         57 S L11 SSS FULL
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L14         1 S E3

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L16         1 S L15 AND (L13 OR L14)

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